Fvgcm Combo (1994 – 1998) Production Run Summary

Status

Available as of 9/30/2007 on anonymous ftp site:

output/gmic/fvgcm/ap1.0HO2Aura2Fvgcm

General Model Configuration

- Years: 1994 – 1998
- 30 minute model time step
- Boundary conditions for 1994-1998

- Restart origin – Bryan's run:
  /cxfsm/g07/bduncan/CO_bbsensitivity/ALL/1994/
  Combo_2x25_Jan94/combo_fvgcm_dec94_2x25_spinup.rst.nc

- GEOS4AGCM met fields
- 8 records per day
- 2 deg lat x 2.5 deg lon x 42 levels with lid at 0.01 hPa

- JPL02 updates
- HO2 uptake reaction on tropospheric aerosols

- New tropopause definition

- Fast_JX v5.2
- The x-section data have been revised using JPL-02, IUPAC (up to 2004) and Gierczak's acetone tables.

- Ship emissions
- Harvard 1980-1990
- Fossil fuel & biofuel Harvard 1995

- Ap1.0 lightning parameterization (Allen, 2006)

- 195 profile stations
- Vertical profile truncation fix for column diagnostics
- Capability to output surface ozone in the freq files
- Capability to output column profiles in the freq files

Code Version

Runs were performed on the Aura branch

Tag: AuraRunsCodeBranch_ap1_0HO2AuraFvgcm
Version: 2.0.0.b2

Known Bugs

The ship emissions were processed incorrectly in units of kg/s, instead of molec/s. Therefore, the production of ozone from shipping NOx is too low and should be higher by a ratio of 48/30, the molecular weights of ozone/NO. This correction is implemented in Aura 4.

Lightning

Dale 2006 ap1.0

Output & Diagnostics

- 4 overpass times
  - 2 kinds of noon species, which really represent different satellite overpass times. Both types save CH2O, CO, O3, NO2, and OH
- Overpass times: 10 – 11 am, 1 – 2 pm, midnight – 3 am, 9 pm – midnight
- Photolysis overhead ozone column in overpass files
- Other overpass outputs: temperature, surface pressure, mass, grid box, relative humidity, and cloud optical depth (1000 nm)

- Instantaneous daily constituents (freq1) "const_freq1". The constituents to be output at this frequency are: CH4, CO, HNO3, N2O, O3, OH, ClO, Cl2O2, ClONO2, HCl, CH3Cl, CFCl3 and CF2Cl2
- Other instantaneous daily outputs: potential vorticity, tropopause pressure, temperature, surface pressure, mass, relative humidity and metwater

- Grid box height in overpass, idaily, and hourlyoz files
- Surface hourly ozone for 1/1994 – 12/1994
- Lower 8 levels of hourly ozone for 1/1995 – 12/1998
- All species in "const" in monthly averaged files

Emissions *(From Bryan 7/13/2007)*

emist_1995_m_2x2.5_biomassBurn80-90.nc

Description: Monthly emission file for combo and trop mechanisms for the mid-1990s. The fossil fuel and biofuel emissions are for 1995 and the biomass burning emissions are for the 1980s-1990s. From Jennifer Logan at Harvard.

Aerosol Dust *(Added by Gary 3/11/2007)*

aerodust_agcm_2x2.5_2001_kgm-3.nc